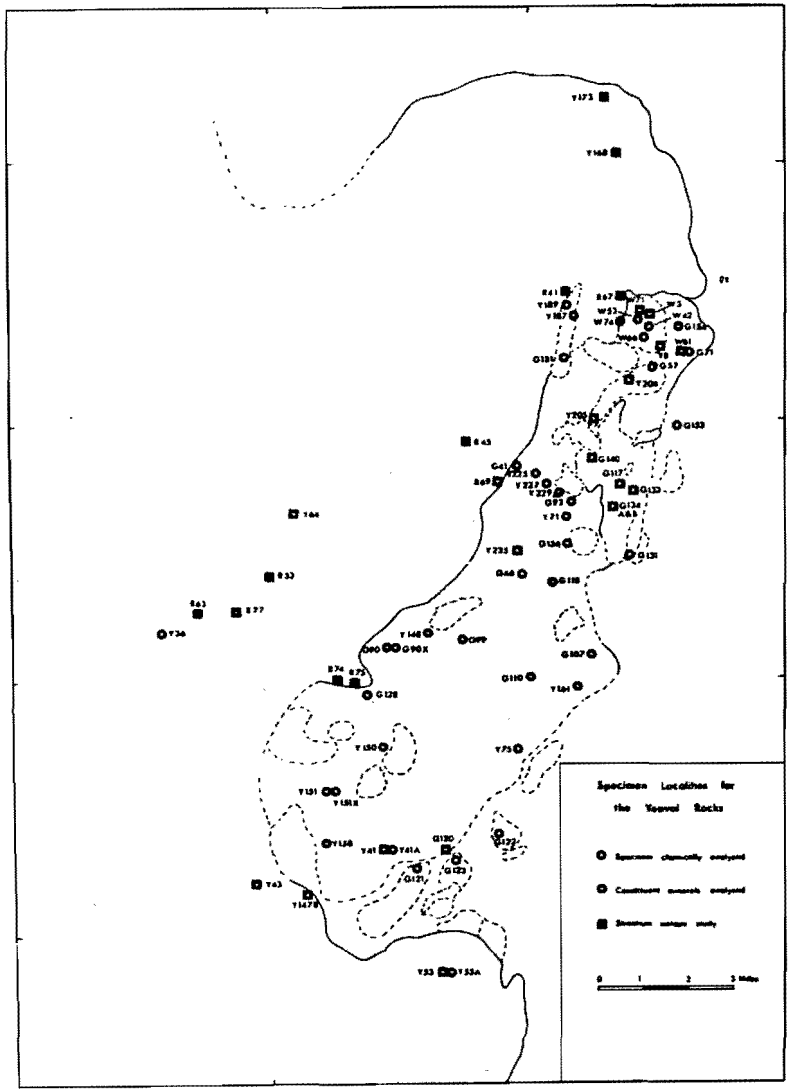
APPENDIX 2 - MODAL ANALYSES AND SAMPLE LOCALITIES FROM GULSON (1968)

Table A2 - Modal analyses of Naringla Monzodiorite

	Qtz.	Plag.	K-F.	Hbl.	Biot.	Acc.
Y12	23.5	54.0	7.2	8.5	6.0	0.8
Y14	25.5	43.6	15.0	15.7	0.1	0.1
Y67	23.5	52.5	8.2	10.4	4.4	1.0
Y69	23.3	50.0	8.5	13.6	4.1	0.5
Y149	22.4	49.5	10.2	12.4	4.9	0.5
Y195	23.4	56.2	6.3	13.1	0.3	0.7
G84	23.3	50.5	9.4	9.5	6.6	0.7
G88	24.3	45.5	12.3	10.6	6.6	0.7
G91	21.6	52.2	9.7	12.6	3.2	0.7
G72	20.7	46.4	15.6	13.0	3.7	0.6
G98	20.7	53.8	8.7	11.6	4.1	1.1
G96	18.1	53.2	7.6	10.6	9.3	1.2
Y245	15.3	51.7	9.4	17.8	5.4	0.4
Y16	14.9	54.1	11.4	13.3	5.7	0.6
G73	14.6	59.4	6.7	17.6	0.8	0.9
G101	14.1	49.2	9.2	20.3	5.1	2.1
Y208	14.3	49.3	14.3	18.7	3.0	0.4
Y147	12.4	58.4	9.1	15.3	1.9	1.9
G86	12.9	50.5	15.8	15.2	4.4	1.2
G102	12.0	53.6	12.0	16.2	5.4	0.8
G105	13.4	52.9	7.4	18.9	5.9	1.5
G55	9.8	57.5	13.9	15.2	1.3	2.3
G106	9.0	52.6	15.0	20.0	2.4	1.0
G35	8.6	58.2	8.3	23.0	0.7	1.2
G80	6.4	59.6	14.7	13.8	4.1	1.4

All analyses from Gulson (1968)



APPENDIX 3 - ELECTRON MICROPROBE ANALYSES

Table A3-1 - Chlorite analyses

OXIDES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
SiO2	27.75	26.45	27.09	26.94	28.23	27.95	28.01	27.32	26.19	25.41	25.81	26.70	27.63	27.35	27.71	26.35	27.47	27.21
TiO2	0.16	0.06	0.11	0.28	2.08	----	----	----	----	----	----	----	----	----	----	----	----	----
Al2O3	17.61	19.28	18.19	18.60	17.25	17.87	17.26	19.66	17.73	19.32	20.00	20.43	19.60	19.70	17.74	19.64	19.61	18.27
FeO	26.35	23.45	23.29	25.52	21.82	26.77	27.58	24.73	31.82	27.48	27.44	23.46	22.11	24.07	26.94	25.12	22.47	26.53
MnO	0.22	0.32	0.19	0.63	0.39	0.96	0.58	0.93	0.86	2.35	0.99	0.66	0.36	0.58	0.93	0.72	0.43	0.63
MgO	16.15	16.60	16.79	16.04	14.90	15.45	15.57	16.36	12.40	14.44	14.76	17.75	19.30	17.30	15.68	17.17	19.02	16.36
CaO	0.12	0.07	0.10	0.37	3.20	----	----	----	----	----	----	----	----	----	----	----	----	----
Na2O	0.04	0.02	0.07	----	0.04	----	----	----	----	----	----	----	----	----	----	----	----	----
K2O	----	0.04	0.01	0.01	0.04	----	----	----	----	----	----	----	----	----	----	----	----	----
Cr2O3	0.03	----	----	----	0.04	----	----	----	----	----	----	----	----	----	----	----	----	----
NiO	0.03	0.05	----	----	0.03	----	----	----	----	----	----	----	----	----	----	----	----	----
BaO	----	0.02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
TOTAL	88.47	86.36	85.84	88.38	88.03	89.00	89.00	89.00	89.00	89.00	89.00	89.00	89.00	89.00	89.00	89.00	89.00	89.00
Si*	5.824	5.617	5.775	5.656	5.879	5.853	5.884	5.656	5.661	5.412	5.444	5.491	5.628	5.634	5.813	5.480	5.610	5.693
Ti	0.025	0.009	0.018	0.044	0.326	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Al	4.356	4.825	4.571	4.602	4.233	4.410	4.273	4.797	4.516	4.849	4.971	4.592	4.705	4.782	4.386	4.814	4.720	4.505
Fe2+	4.626	4.164	4.151	4.481	3.800	4.687	4.845	4.281	5.751	4.894	4.839	4.034	3.766	4.146	4.726	4.369	3.837	4.642
Mn	0.046	0.057	0.034	0.113	0.069	0.170	0.103	0.163	0.157	0.424	0.177	0.115	0.062	0.101	0.165	0.127	0.074	0.112
Mg	5.054	5.254	5.335	5.019	4.627	4.822	4.875	5.048	3.995	4.584	4.640	5.441	5.859	5.311	4.903	5.323	5.789	5.102
Ca	0.027	0.016	0.024	0.083	0.715	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Na	0.018	0.006	0.027	0.002	0.015	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
K	-----	0.010	0.001	0.001	0.011	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Cr	0.005	-----	-----	-----	0.006	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ni	0.006	0.009	-----	-----	0.005	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ba	-----	0.002	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Fe3+	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

* - Based on 36 oxygens and 16 hydroxides

1 - DC78C - Monzodiorite - This study
2 - RG24C - Granodiorite - " "
3 - CC018 - Granodiorite - " "
4 - DC76C - Granodiorite - " "
5 - GR048 - Granodiorite - " "
6 - Y6-399 - Granodiorite - Wetler (1979)
7 - Y108-139 - Granodiorite - " "
8 - Y13-116 - Granodiorite - " "
9 - Y13-376 - Granodiorite - " "
10 - Y18-177 - Granodiorite - " "
11 - Y19-135 - Granodiorite - " "
12 - Y20-235 - Dacite - " "
13 - Y26-2958 - Dacite - " "
14 - Y12-139 - Dacite - " "
15 - Y14-108 - Dacite - " "
16 - Y11-487 - Microgranodiorite - " "
17 - Y11-708 - Microgranodiorite - " "
18 - Y12-217 - Microgranodiorite - " "

Table A3-2

	EPIDOTE		PLAGIOCLASE							PREHNITE			
OXIDES	GRDXA	GRDXB	DC78E	DC78D	RG24D	CC1C	DC76B	DC76F	GRDAA	DC78A	RG24A	RG24B	CC1D
SiO2	38.36	38.22	53.84	53.47	68.26	68.60	69.94	69.43	57.81	42.01	42.19	41.75	41.64
TiO	----	----	0.06	0.12	0.06	0.03	0.02	0.08	-----	0.09	0.16	0.08	0.11
Al2O3	24.99	26.90	28.21	29.03	19.55	19.90	19.69	22.60	27.39	19.77	22.32	22.37	21.64
FeO	10.41	8.01	0.56	0.39	0.05	0.02	0.04	0.37	0.31	4.87	1.78	1.19	2.51
MnO	0.34	0.32	0.05	0.03	0.07	----	0.02	----	0.01	----	0.09	0.09	0.04
MgO	0.01	----	0.11	0.05	0.01	0.18	0.02	0.09	0.01	0.03	----	0.03	0.03
CaO	23.07	23.51	11.24	11.92	0.13	0.47	0.40	0.93	9.76	26.71	27.33	27.01	26.80
Na2O	0.03	0.02	4.75	4.74	11.73	11.67	10.36	9.06	5.92	0.05	0.04	0.02	0.05
K2O	0.02	----	0.24	0.25	0.02	0.02	0.06	0.29	0.36	0.02	----	0.01	0.01
Cr2O3	0.06	0.06	0.08	0.07	0.02	0.03	0.02	0.04	0.03	0.06	0.02	----	0.03
NiO	----	----	0.15	----	0.02	0.15	----	0.10	----	0.06	0.09	0.01	0.13
BaO	----	----	0.03	0.11	0.03	0.09	0.11	----	0.24	----	0.03	0.05	0.17
TOTAL	97.30	97.04	99.32	100.17	99.95	101.16	100.68	103.00	101.82	93.67	94.04	92.61	93.14
Si*	3.099	3.058	9.812	9.685	11.994	11.882	12.072	11.715	10.220	4.977	4.977	4.900	4.903
Ti	-----	-----	0.009	0.016	0.008	0.003	0.003	0.010	-----	0.008	0.008	0.014	0.007
Al	2.379	2.536	6.060	6.197	4.032	4.064	4.006	4.495	5.708	2.761	3.055	3.096	2.997
Fe2+	0.703	0.536	-----	-----	-----	-----	-----	-----	-----	0.483	0.173	0.117	0.247
Mn	0.023	0.022	0.007	0.004	0.010	-----	0.002	-----	0.001	-----	0.009	0.009	0.004
Mg	0.001	-----	0.029	0.013	0.001	0.045	0.005	0.023	0.003	-----	-----	0.005	0.005
Ca	1.997	2.015	2.194	2.314	0.024	0.088	0.074	0.168	1.849	3.390	3.401	3.398	3.374
Na	0.004	0.003	1.680	1.665	3.981	3.921	3.466	2.966	2.028	0.012	0.009	0.005	0.011
K	0.002	-----	0.055	0.057	0.004	0.005	0.014	0.062	0.081	0.003	-----	0.002	0.002
Cr	0.004	0.004	0.012	0.010	0.003	0.005	0.003	0.005	0.004	0.006	0.002	-----	0.003
Ni	-----	-----	0.022	-----	0.003	0.021	-----	0.013	-----	-----	-----	-----	-----
Ba	-----	-----	0.002	0.008	0.002	0.006	0.007	-----	0.016	-----	-----	-----	-----
Fe3+	-----	-----	0.086	0.059	0.007	0.003	0.005	0.053	0.045	-----	-----	-----	-----

*based on 13 O and 1 OH

*based on 32 oxygens

★ - Based on 20 oxygens and 4 hydroxides

APPENDIX 4 - ISOTOPIC DATA

Table A4-1 - Rb-Sr data for Yeoval monzodiorites, gabbros and related rocks

ROCK TYPE AND NO.	SAMPLE	Rb (ppm)	Common Sr (ppm)	Rb/ Sr	Calculated Sr/ Sr	Age (m.y.)
Low-Si Monzodiorite (Y8)	Whole Rock	30.5	394	0.227	0.7067	
	Biotite	324	15.0	63.360	1.0631	397
Granodiorite (Y205)	Whole Rock	119	403	0.8674	0.7095	
Granodiorite (Y206)	Whole Rock	103	395	0.7538	0.7093	
Gabbro	Whole Rock	2	395	0.015	0.7048	
Pyroxenite (W61)	Whole rock	17	113	0.440	0.7097	
Skarn (W74)	Whole Rock	30	159	0.551	0.7085	
High-K Monzodiorite (Y235)	Whole Rock	92	512	0.526	0.7085	
	K-Feldspar	269	503	1.574	0.7134	
	Biotite	358	63.8	16.465	0.7946	
		358	63.8	16.474	0.7945	
High-K Monzodiorite (G120)	Whole Rock	95	319	0.876	0.7095	
	K-Feldspar	245	500	1.437	0.7127	
		244	497	1.439	0.7135	
	Biotite	559	6.2	263.802	2.1926	396
High-K Monzodiorite (Y41)	Whole Rock	106	496	0.627	0.7086	
	K-Feldspar	325	508	1.876	0.7143	
	Biotite	463	19.1	71.215	1.1028	392
		444	22.9	57.023	1.0256	395
	Plagioclase	44.8	867	0.152	0.7052	

Table A4-2 - Rb-Sr data for Yeoval adamellites

Sample no.	Rb(ppm)	Common Sr (ppm)	Rb/ Sr	Calculated Sr/ Sr
Granophyric types				
R74	95.2	158.6	1.762	0.7135
R75	124.2	61.9	5.892	0.7373
R63	118.8	51.5	6.781	0.7430
R77	97.3	32.5	8.804	0.7472
R41	116.3	43.6	7.834	0.7428
R67	128.6	44.6	8.464	0.7535
R69	117.3	55.2	6.226	0.7397
Coarse grained types				
Y64	124.9	30.8	11.917	0.7645
R53	120.9	22.3	15.921	0.7854
Y173	139.7	39.1	10.490	0.7598
Y168	128.5	58.1	6.503	0.7392
R45	103.8	58.8	5.184	0.7322
Y43	84.3	92.1	2.688	0.7187
Y147B	108.9	85.0	3.759	0.7249
Y53 Whole rock	159.2	33.8	13.848	0.7761
Biotite	491.8	13.8	104.62	1.2687	378

Table A4-3 - Rb-Sr data for Yeoval andesitic rocks

Rock type and no.	Rb(ppm)	Common Sr (ppm)	Rb/ 86 Sr	Calculated Sr/ Sr
G117 Low-Si andesite	83.5	510	0.480	0.7075
G133 Volcanic breccia	7.0	246	0.084	0.7051
G134A Basalt	38.1	490	0.229	0.7061
G134B Low-Si andesite	22.0	562	0.114	0.7055

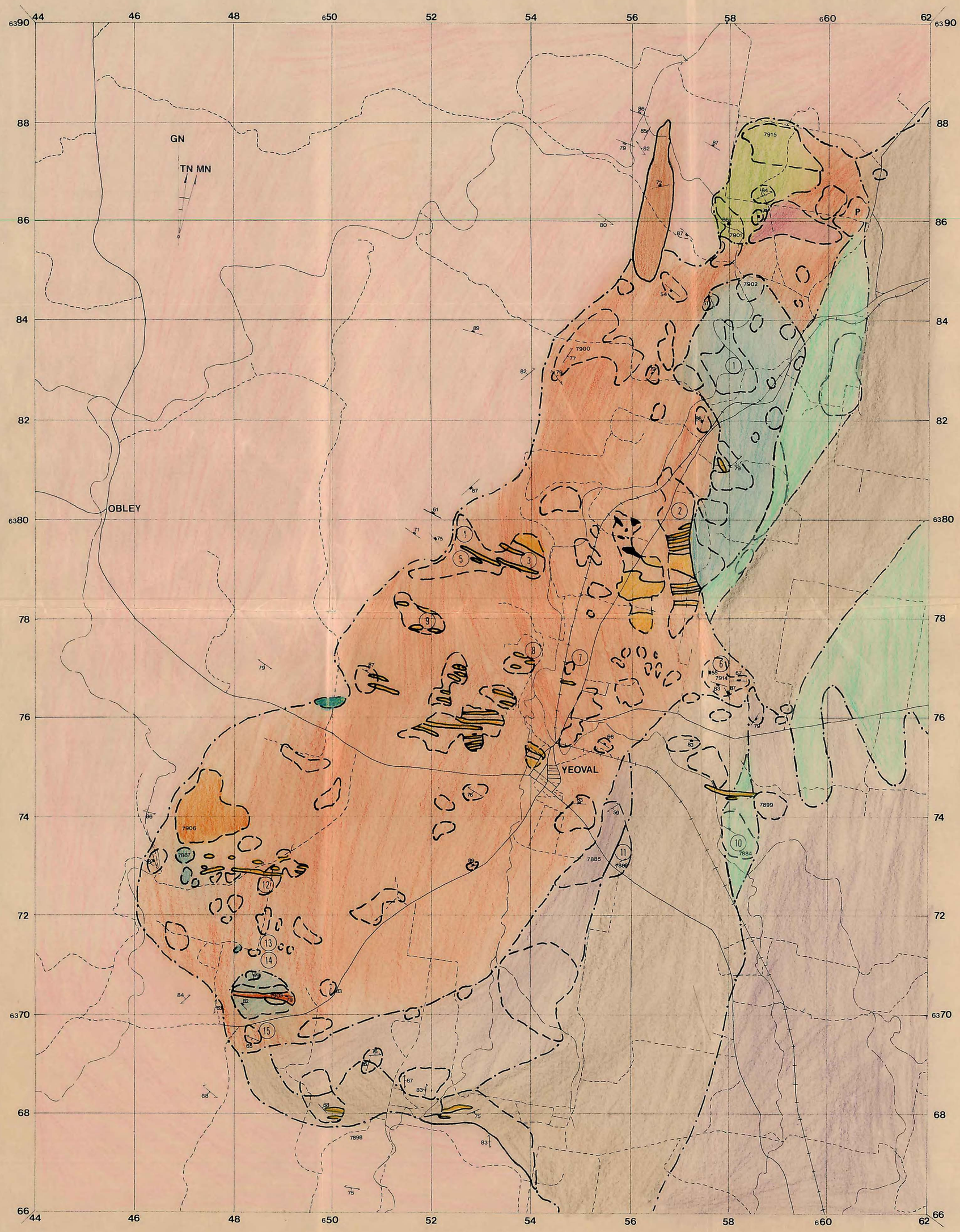
APPENDIX 5: ANALYTICAL METHODS

All major elements except Na, H_2O + H_2O-, CO_2 and Fe^{2+} were determined using X-ray fluorescence spectrometry. The method is outlined by Norrish and Hutton (1969).

Sodium was determined by flame photometry using an internal lithium standard, Fe^{2+} was determined by titration of excess ammonium meta-vanadate with ferrous ammonium sulphate. H_2O^- was determined by the weight loss of a sample that had been heated in an oven at 110°C. H_2O^+ and CO_2 were determined by heating samples and collecting these volatiles in carbasorb and phosphorous pentoxide collection tubes. Trace elements were determined by X-ray fluoresence.

APPENDIX 6: SAMPLE CATALOGUE

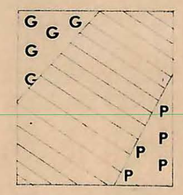
Name	Sample No.	L.T.U. No.
Tuff	Set-C	7884
Canowindra Porphyry	DC37	7885
Silurian Alkali Basalt	DC47	7886
Gabbroic Diorite	DC116	7887
Porphyritic Basaltic Andesite	GR35	7889
Granodiorite	GR49	7890
Microadamellite	GR50	7891
Albitized Microgranodiorite	GR51	7892
Rhyolite Dyke	GR52	7893
Albitized Granodiorite	GR53	7894
Chloritized Microgranodiorite	GR54	7895
Monzodiorite	MR1A	7896
Albitized Granodiorite	GRV	7897
Obley Adamellite	DC43	7898
Canowindra Porphyry	DC44	7899
Granodiorite	DC76	7900
Monzodiorite	DC78	7901
Epidotized Basaltic Andesite	DC92	7902
Micro-Adamellite Dyke	DC103	7903
Aplite	DC107	7904
Meta-Monzodiorite	DC108	7905
Rhyolite	RG17	7907
Granodiorite	YV1	7908
Dacite Porphyry	YV6A	7909
Dacite Porphyry	YV7	7910
Basic Dyke	YV30A	7911
Granodiorite	CC1B	7912
Granodiorite	CC24B	7913
Rhyolite Dyke	TMA	7914
Gabbro	DC86	7915



LEGEND

Locality Diagram

Reliability Diagram



Detailed Ground Survey

G Gulson (1968)

P Pickett et al (1982)

Stratigraphy

TERTIARY

NEWER VOLCANICS

Basic Dykes

BOX LEIGH PARK ADAMELLITE

Adamellite

RHYOLITES

Rhyolite

Rhyolite Dykes

DEVONIAN

OBLEY ADAMELLITE

Microadamellite Dyke

Adamellite

QUARTZ - HORNBLENDE DIORITE

Diorite

NARINGLA MONZODIORITE

Monzodiorite granodiorite

Gabbro

P Pyroxenite

Basaltic andesites, basalts, gabbroic diorites

SILURIAN

CUDAL GROUP

Hanover Formation: shale, mudstone, basalt

Canowindra Porphyry

Yullundry Formation: tuff

Symbols

Creek

Railway

Road - Sealed

Road - Unsealed

7911 Sample Locality (LTU No.)

Shaft

Geological Features

LITHOLOGICAL FEATURES

Definite

Inferred

Outcrop Limit (Approximate)

Structural Symbol

DIP AND STRIKE OF STRATA

67 Inclined

DIP AND STRIKE OF JOINTS

54 Inclined

DIP AND STRIKE OF VEINS

79 Inclined

Vertical

Deposits

1. Goonoo Prospect
2. Porphyry King Prospect
3. Cyclops Mine
4. Buckinbah Gossan
5. North Buckinbah Prospect
6. Timby Hill
7. Yeoval East Prospect
8. Yeoval Prospect
9. A1 Mine
10. Suntop
11. Freehold Prospect
12. Goodrich Mine
13. Mt Rose Mine
14. Viles Lode
15. Jakes Prospect

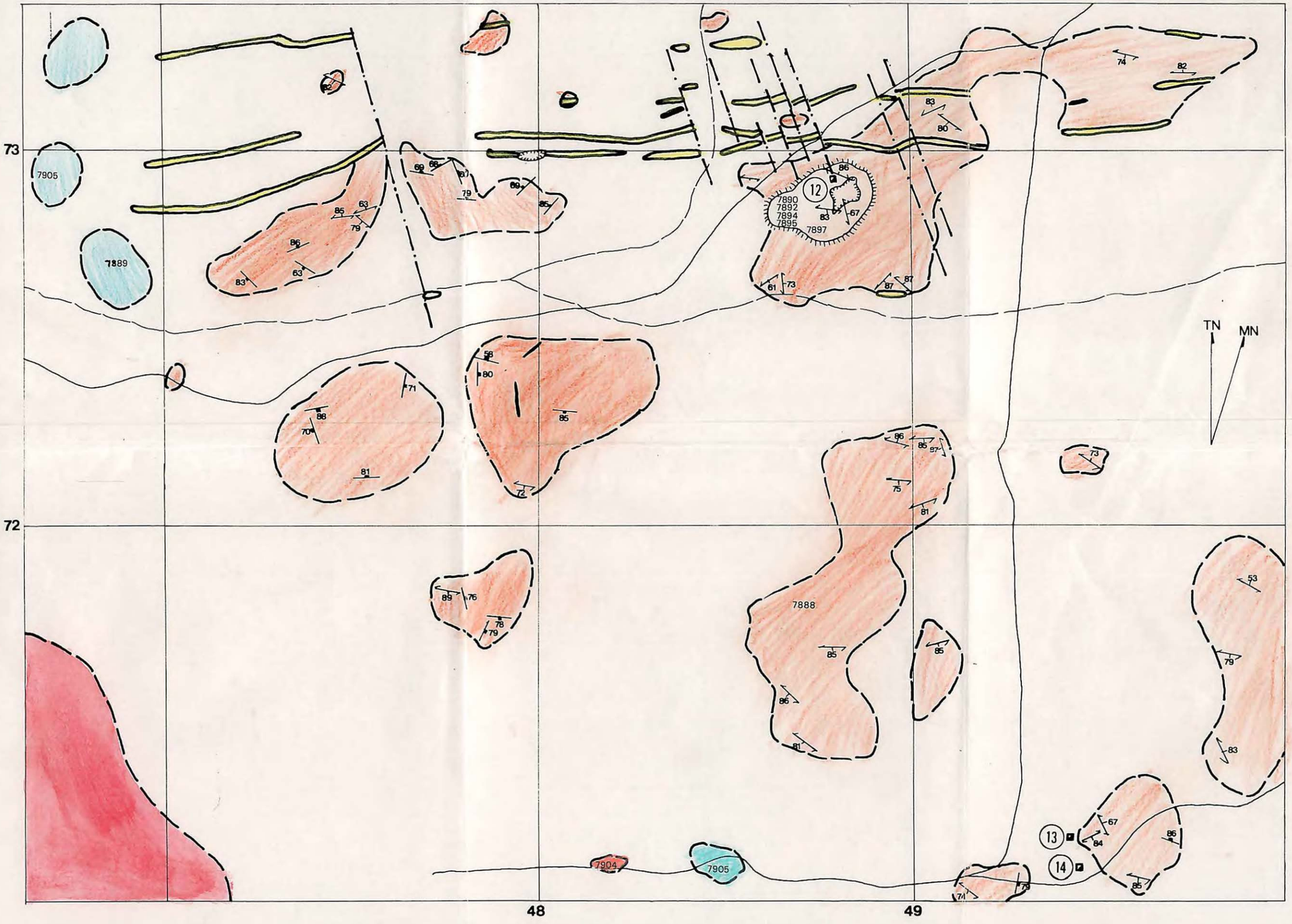
GRID REFERENCE - REFER TO SHEET 8632 WELLINGTON

Scale 1:50,000

0 1.0 2.0 3.0 km

GEOLOGY OF THE YEOVAL DISTRICT, CENTRAL WESTERN NSW.

Nov. '85	PREPARED BY D.COOKE DRAFTED BY H.BUTT & D.COOKE	Figure 1



LEGEND

STRATIGRAPHY

TERTIARY

RECENT
- Alluvium

NEWER VOLCANICS
- Basic Dyke

RHYOLITES
- Rhyolite

DEVONIAN

OBLEY ADAMELLITE
- Microadamellite
- Aplite

NARINGLA MONZODIORITE
- Porphyritic Dacite
- Geotroic Diorite
- Meta-Monzodiorite
- Monodiorite

SYMBOLS

- BUILDING
- CREEK
- DUMP
- PIT
- ROAD–UNSEALED
- 7911 SAMPLE LOCALITY (L.T.U. NUMBER)
- SHAFT

GEOLOGICAL FEATURES

- DEFINITE
- OUTCROP LIMIT
- FAULT

STRUCTURAL SYMBOLS

DIP AND STRIKE OF JOINTS
- 66 Inclined

DIP AND STRIKE OF VEINS
- 56 Inclined
- Vertical

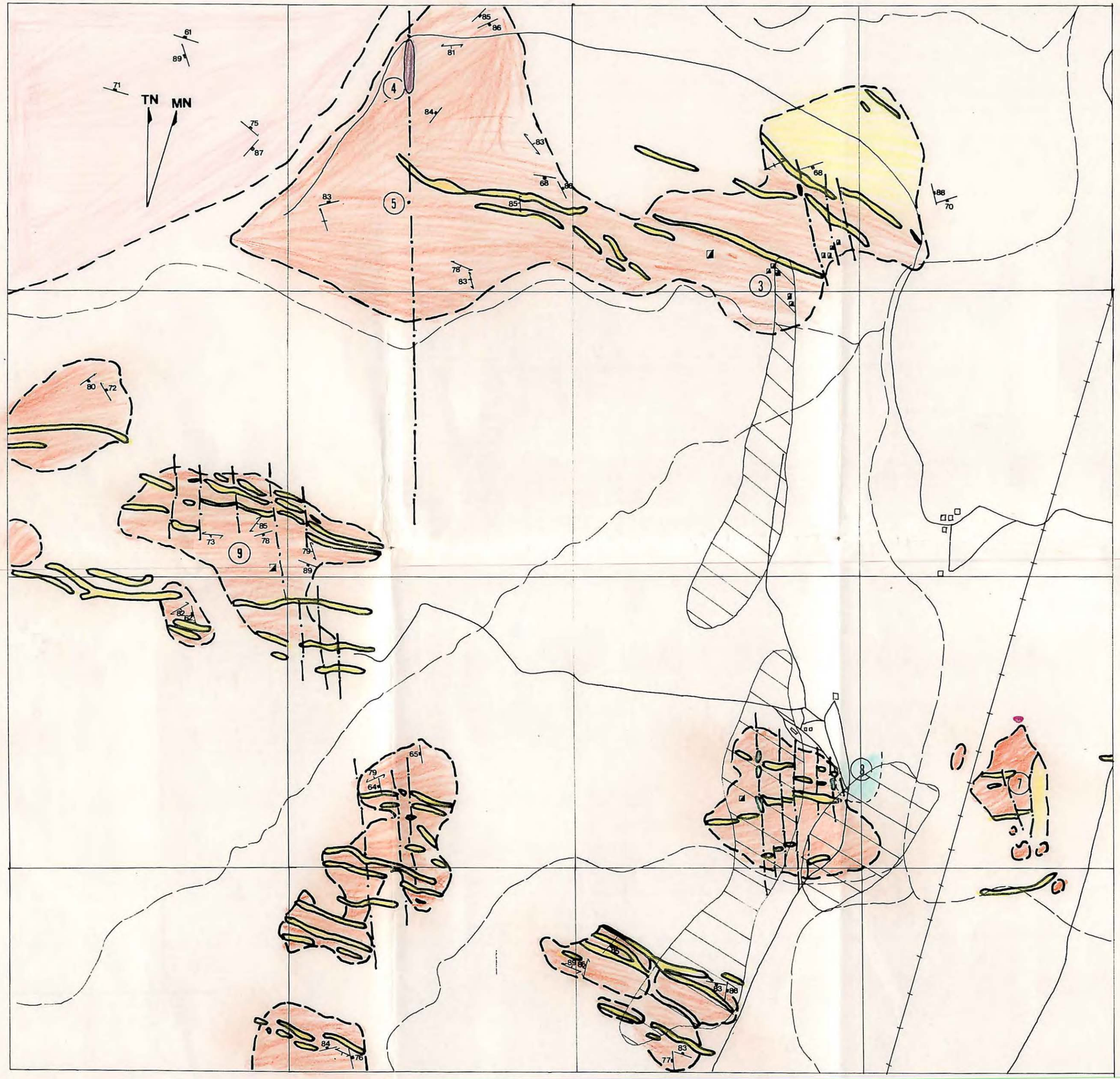
DEPOSITS

- (12) GOODRICH MINE
- (14) VILES LODE
- (13) MT. ROSE

Scale 1:10,000

0 500m

Geology of the Goodrich Mine	Figure 2
Prepared by D.Cooke Drafted by H.Butt & D.Cooke	Nov. '85



LEGEND

Stratigraphy

TERTIARY

NEWER VOLCANICS

- Basic Dyke

RHYOLITE

- Rhyolite

DEVONIAN

OBLEY ADAMELLITE

- Adamellite

NARINGLA MONZODIORITE

- Gossan
- Microgranodiorite Porphyry
- Leucocratic Granodiorite
- Monzodiorite

Symbols

- Building
- Creek
- Geochemically Anomalous Zone
- Pit
- Road-Unsealed
- 7911 Sample Locality LTU No
- Shaft

Geological Features

- Boundary (Definite)
- Boundary (Approximate)
- Outcrop Limit Approximate
- Fault

Structural Symbols

DIP & STRIKE OF JOINTS

- 23 Inclined

DIP & STRIKE OF VEINS

- 44 Inclined
- Vertical

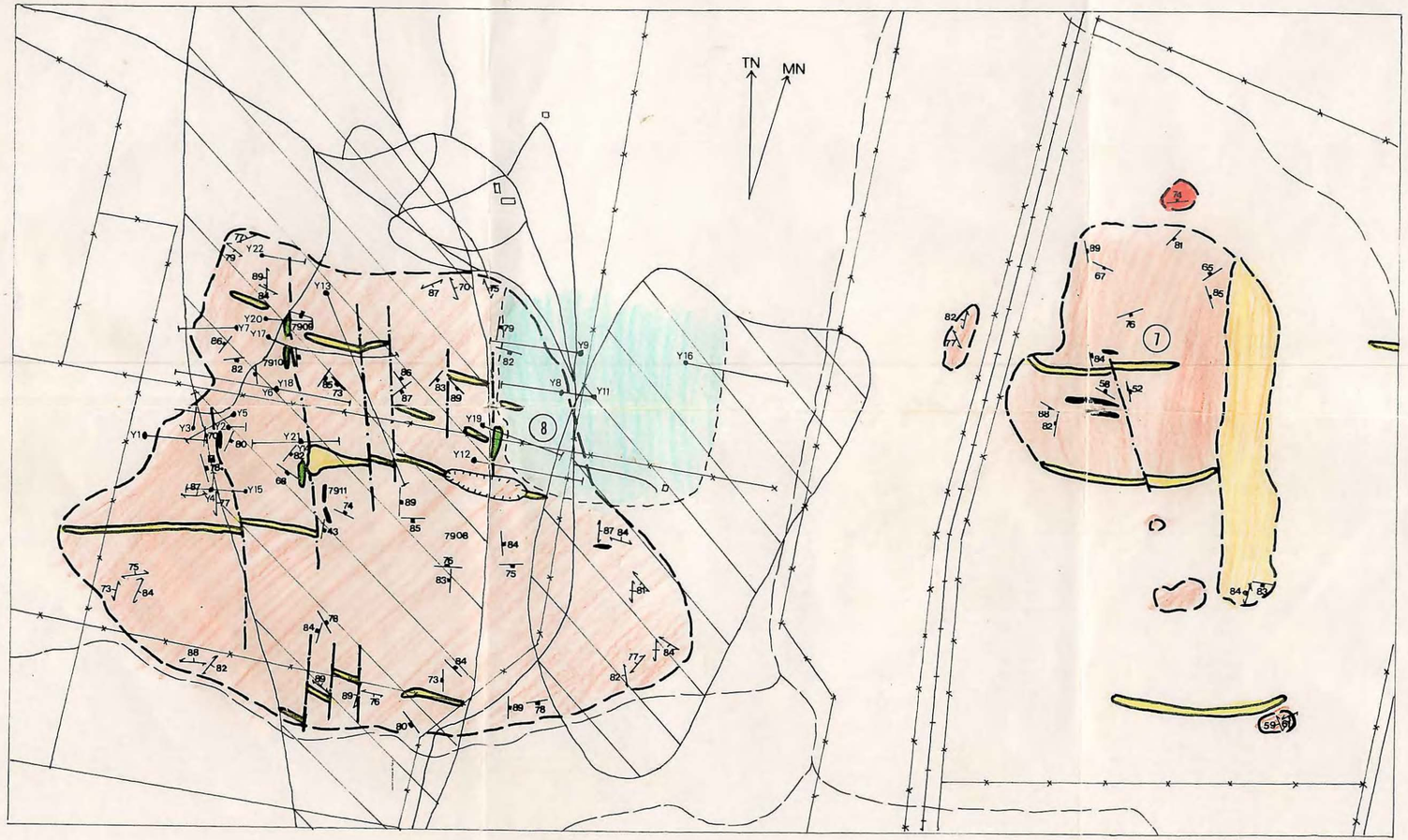
Deposits

3. Cyclops Mine
4. Buckinbah Gossan
5. North Buckinbah Prospect
7. Yeoval East Prospect
8. Yeoval Prospect
9. A1 Mine

Scale 1 : 12,000

0 0.5 1.0km

Fig 3	**Geology of the Yeoval & Cyclops Deposts, & Surrounding Area.**
NOV. '85	PREPARED BY D COOKE DRAFTED BY H BUTT & D COOKE



LEGEND

Stratigraphy

TERTIARY

NEWER VOLCANICS

Basic Dyke

RHYOLITES

Rhyolite

DEVONIAN

NARINGLA MONZODIORITE

Porphyritic Dacite

Microgranodiorite Porphyry

Leucocratic Granodiorite

Granodiorite

Symbols

- Building
- Creek
- Diamond Drill Hole (Y18)
- Fence
- Geochemically Anomalous Zone (<1000ppm Cu)
- Pit
- Railway
- Road – Unsealed
- Shaft
- Fault

Geological Features

- Geological Boundary (Definite)
- Geological Boundary (Approximate)
- Outcrop Limit (Approximate)

Structural Symbols

DIP AND STRIKE OF JOINTS

- 76 Inclined
- Vertical

DIP AND STRIKE OF VEINS

- 65 Inclined
- Vertical

7911 Sample Locality (LTU No.)

Deposits

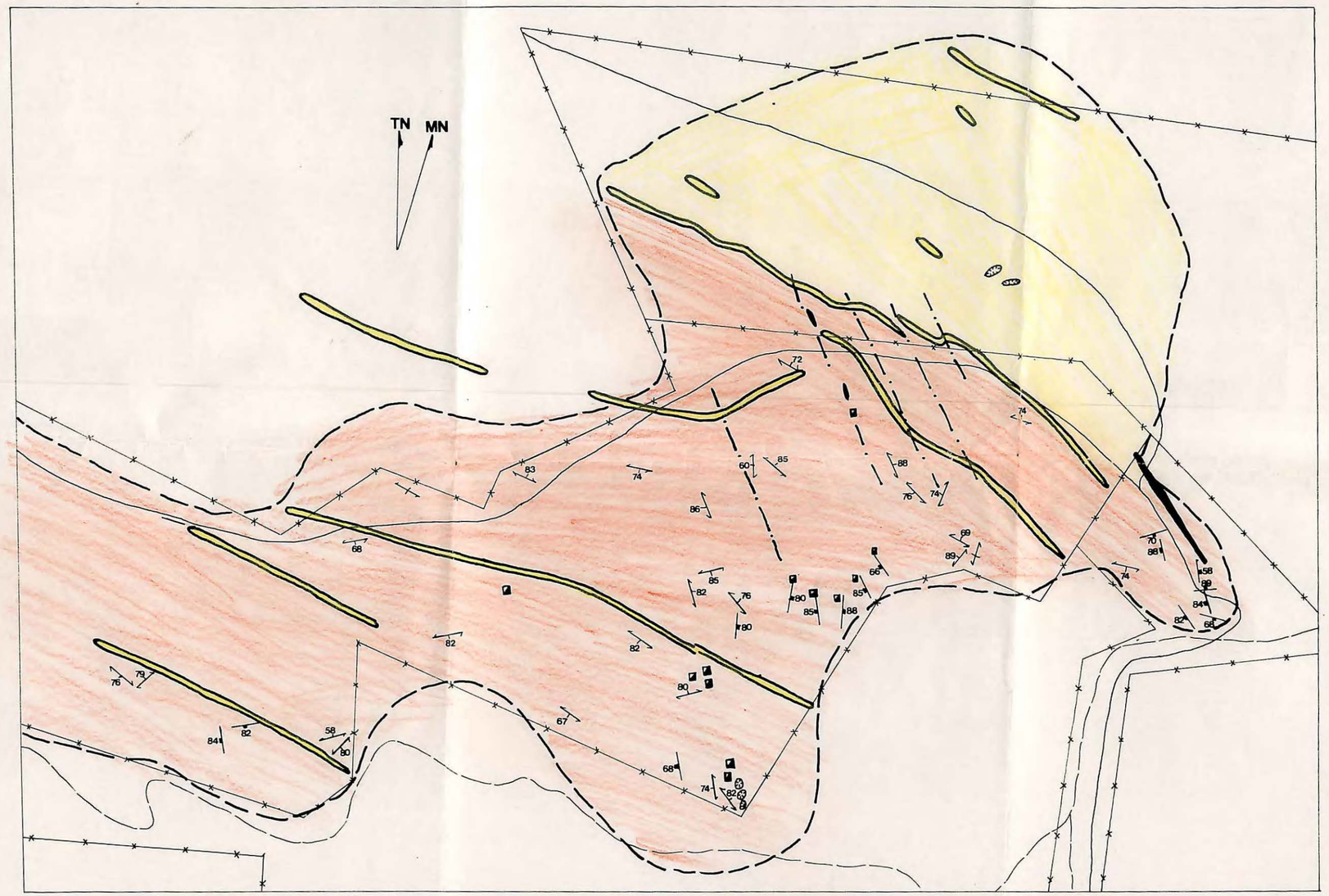
- (7) Yeoval East Prospect
- (8) Yeoval Prospect

Scale 1:4000

0 200m

Geology of the Yeoval and Yeoval East Prospects - Yeoval, N.S.W.

November '85	Prepared by D.Cooke Drafted by H.Butt and D.Cooke	Figure 4



LEGEND

Stratigraphy

TERTIARY
- NEWER VOLCANICS
- Basic Dyke

DEVONIAN
- RHYOLITE
- Rhyolite
- NARINGLA MONZODIORITE
- Monzodiorite

Deposits

(3) Cyclops Mine

Symbols

- Creek
- Fence
- Pit
- Road-Unsealed
- 7911 Sample Locality (LTU No.)
- Shaft

Geological Features

- Boundary (Definite)
- Outcrop – Approximate
- Fault

Structural Symbols

DIP & STRIKE OF JOINTS
- 70 Inclined

DIP & STRIKE OF VEINS
- 67 Inclined
- Vertical

Scale 1:5000

0 250m

Fig. 5	**Sketch Map of the Geology Surrounding the Cyclops Mine, Yeoval, N.S.W.**
NOV 85	PREPARED BY D COOKE DRAFTED BY H BUTT & D COOKE